

ZXMN3A04DN8

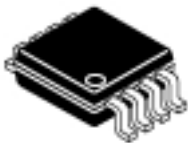
DUAL 30V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS}=30V$; $R_{DS(ON)}=0.025\Omega$; $I_D=7.6A$

DESCRIPTION

This new generation of TRENCH MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



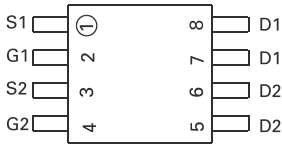
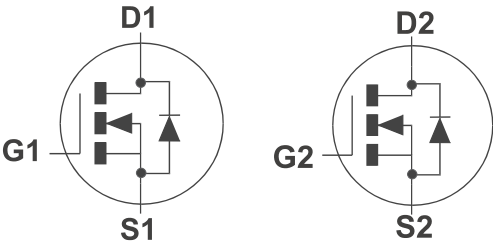
SO8

FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- Low profile SOIC package

APPLICATIONS

- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control



Top View

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN3A04DN8TA	7"	12mm	500 units
ZXMN3A04DN8TC	13"	12mm	2500 units

DEVICE MARKING

- ZXMN
3A04D

ZXMN3A04DN8

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	30	V
Gate Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($V_{GS}=10V$; $T_A=25^\circ C$)(b)(d) ($V_{GS}=10V$; $T_A=70^\circ C$)(b)(d) ($V_{GS}=10V$; $T_A=25^\circ C$)(a)(d)	I_D	7.6 6.0 5.8	A
Pulsed Drain Current (c)	I_{DM}	25	A
Continuous Source Current (Body Diode) (b)	I_S	2.5	A
Pulsed Source Current (Body Diode)(c)	I_{SM}	25	A
Power Dissipation at $T_A=25^\circ C$ (a)(d) Linear Derating Factor	P_D	1.25 10	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ (a)(e) Linear Derating Factor	P_D	1.8 14	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ (b)(d) Linear Derating Factor	P_D	2.1 17	W mW/ $^\circ C$
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ C$

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)(d)	$R_{\theta JA}$	100	$^\circ C/W$
Junction to Ambient (a)(e)	$R_{\theta JA}$	70	$^\circ C/W$
Junction to Ambient (b)(d)	$R_{\theta JA}$	60	$^\circ C/W$

NOTES

(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at $t \leq 10$ secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB, $D=0.05$ pulse width=10 μs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

(d) For device with one active die

(e) For device with two active die running at equal power.

ZXMN3A04DN8

ELECTRICAL CHARACTERISTICS (at $T_A = 25^\circ\text{C}$ unless otherwise stated).

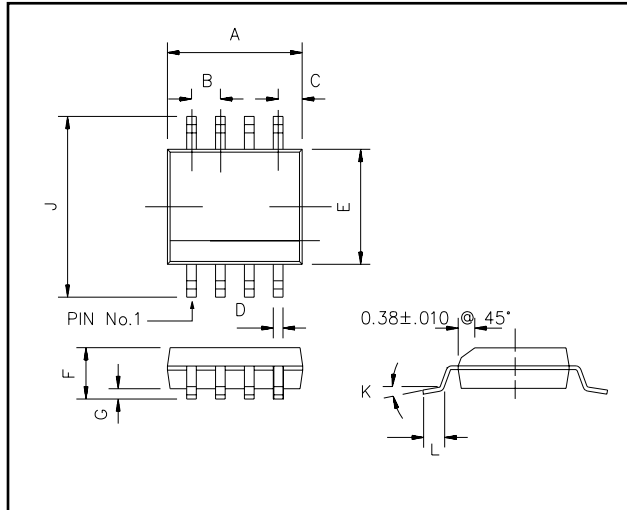
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	30			V	I _D =250μA, V _{GS} =0V
Zero Gate Voltage Drain Current	I _{DSS}			0.5	μA	V _{DS} =30V, V _{GS} =0V
Gate-Body Leakage	I _{GSS}			100	nA	V _{GS} =±20V, V _{DS} =0V
Gate-Source Threshold Voltage	V _{GS(th)}	1.0			V	I _D =250μA, V _{DS} = V _{GS}
Static Drain-Source On-State Resistance (1)	R _{DS(on)}			0.02 0.03	Ω Ω	V _{GS} =10V, I _D =12.6A V _{GS} =4.5V, I _D =10.6A
Forward Transconductance (3)	g _{fs}		17.5		S	V _{DS} =15V,I _D =6A
DYNAMIC (3)						
Input Capacitance	C _{iss}		1800		pF	V _{DS} =25V, V _{GS} =0V, f=1MHz
Output Capacitance	C _{oss}		289		pF	
Reverse Transfer Capacitance	C _{rss}		178		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	t _{d(on)}		5.5		ns	V _{DD} =15V, I _D =6A R _G =6.0Ω, V _{GS} =10V
Rise Time	t _r		8.7		ns	
Turn-Off Delay Time	t _{d(off)}		33		ns	
Fall Time	t _f		8.5		ns	
Gate Charge	Q _g		19.4		nC	V _{DS} =15V,V _{GS} =5V, I _D =3.5A
Total Gate Charge	Q _g		35.7		nC	V _{DS} =15V,V _{GS} =10V, I _D =3.5A
Gate-Source Charge	Q _{gs}		5.5		nC	
Gate-Drain Charge	Q _{gd}		7.0		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	V _{SD}			0.95	V	T _J =25°C, I _S =6A, V _{GS} =0V
Reverse Recovery Time (3)	t _{rr}		20.5		ns	T _J =25°C, I _F =6A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Q _{rr}		41.5		nC	

NOTES

- (1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$.
 (2) Switching characteristics are independent of operating junction temperature.
 (3) For design aid only, not subject to production testing.

ZXMN3A04DN8

PACKAGE DIMENSIONS



DIM	Millimetres		Inches	
	Min	Max	Min	Max
A	4.80	4.98	0.189	0.196
B	1.27 BSC		0.05 BSC	
C	0.53 REF		0.02 REF	
D	0.36	0.46	0.014	0.018
E	3.81	3.99	0.15	0.157
F	1.35	1.75	0.05	0.07
G	0.10	0.25	0.004	0.010
J	5.80	6.20	0.23	0.24
K	0°	8°	0°	8°
L	0.41	1.27	0.016	0.050



Zetex plc.
Fields New Road, Chadderton, Oldham, OL9-8NP, United Kingdom.
Telephone: (44)161 622 4422 (Sales), (44)161 622 4444 (General Enquiries)
Fax: (44)161 622 4420

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany

Zetex Inc.
Suite 315
700 Veterans Memorial Highway
Hauppauge
USA

Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49

Telephone: (631) 360-2222
Fax: (631) 360-8222

Zetex (Asia) Ltd.
3701-04 Metroplaza, Tower 1
Hing Fong Road,
Kwai Fong
Hong Kong
Telephone: (852) 26100 611
Fax: (852) 24250 494

These are supported by
agents and distributors in
major countries world-wide
© Zetex plc 2001

www.zetex.com

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.



PROVISIONAL ISSUE A - AUGUST 2001